2000 ANNUAL REPORT

IMPLEMENTATION OF REASONABLE AND PRUDENT ALTERNATIVE AND MEASURE

BIOLOGICAL AND CONFERENCE OPINION ON LOWER COLORADO RIVER OPERATIONS AND MAINTENANCE

October, 2000

INTRODUCTION:

As a result of the designation of critical habitat in the lower Colorado River for Razorback Sucker and Bonytail Chub, Reclamation entered into formal consultation with the Fish and Wildlife Service under Section 7 of the Endangered Species Act on its routine, ongoing, operations and maintenance activities on the lower Colorado River. The Fish and Wildlife Service issued a Biological and Conference Opinion (Opinion) on those activities on April 30, 1997.

The Opinion outlined 17 Reasonable and Prudent Alternative Provisions and 9 Reasonable and Prudent measures. The requirements are associated with three jeopardy opinions (razorback sucker, bonytail chub, and southwestern willow flycatcher), two likely to destroy or adversely modify critical habitat opinions (razorback sucker and bonytail chub), and two "take" but not likely to jeopardize opinions (Yuma clapper rail and the flat-tailed horned lizard).

The lead responsibility for implementing the Reasonable and Prudent Alternative and Measure lies with the Natural Resources Group in the Resource Management Office of Reclamation's Lower Colorado Regional Office. The Natural Resources Group is comprised of a dedicated team of professional biologists and environmental engineers, supported by technical staff.

The following report summarizes activities conducted since May 1999, by the Natural Resources Group in implementing the Reasonable and Prudent Alternative and Reasonable and Prudent Measure provisions, terms and conditions.
In order to make the report more readable, the exact language from the Opinion for each requirement is given, then reporting language is italicized.

REASONABLE AND PRUDENT ALTERNATIVE PROVISIONS

RAZORBACK SUCKER AND BONYTAIL CHUB

1. **Augmentation. Reclamation will provide resources to expand grow-out facilities in the Lower Basin sufficient to augment the razorback sucker population below Parker Dam. The intent is to provide at least 50,000 fish over a five-year period. These fish need not come from wild fry dipped from Lake Mohave. Once approval for bonytail chub reintroduction to the lower river has been obtained, these facilities will be maintained for production of the required number of fish for that effort.**

   Efforts elsewhere on the river are utilizing all available juvenile rearing pond space, preventing the augmentation of this population in designated critical habitat. This component will also provide fish to be used in radio/sonic tracking studies looking at habitat use, predation/competition, and other research efforts.

   Time Frame - Over the 5 year period of the Consultation

   Accomplishments Since May 1999:

   Reclamation continues Intra-Agency Agreement #8-AA-30-01640 with FWS to rear between 100,000 and 150,000 fingerling fish from eggs or larvae and transfer them to Arizona Game and Fish Department's Bubbling Ponds Warm Water Rearing Facility near Page Springs. Since 1998 approximately 61,000 fingerlings were transferred to AGFD. During 1999-2000 an additional 25,000 fry were produced by FWS for rearing to fingerling size.

   Reclamation continues with Cooperative Agreement #1425-98-FC-30-00014 with AGFD to develop/expand rearing facilities at Bubbling Ponds Hatchery and/or provide 50,000 razorback sucker 250 mm in size for transport and stocking in the lower Colorado River below Parker, Arizona. Since the agreement was initiated, AGFD has reared and stocked over 5,000 razorback suckers into the lower river downstream of Parker Dam. Additionally, AGFD has over 50,000 fingerling fish on station which are being reared to target size.

Expenditures/Obligations:

Total programmed cost for the two agreements is $575,000. Both AGFD's Bubbling Ponds Facility and FWS's Willow Beach Hatchery will receive $50,000 each for five years beginning this year (1998). A sixth year is included as a contingency to complete the rearing of any remaining fish left on station. Sixth year funding amounts are $25,000 for FWS and $50,000 for AGFD.

Identified Items Which May Impede Progress:
Construction of ponds (leveling and lining) is proceeding at a much slower rate than anticipated.

Items to be Accomplished During the Next Year:

The rearing process will continue for the razorback suckers.

2. **Review and evaluation. In cooperation with the FWS and with appropriate State fish and wildlife agencies, Reclamation will review and evaluate all of its fish and wildlife programs involving backwaters, maintenance dredging projects and wetland/riparian restoration projects to ensure that efforts to maximize the conservation of bonytail chub and razorback sucker are achieved.**

   No additional backwaters will be designed for sport fishing. The review and evaluation shall be completed within six months of the date of completion of this BO.

   This review and evaluation has been completed, and transmitted to the FWS in October, 1997.

3. **Impoundments. As proposed in the FWS's draft Lower Colorado River Basin Management Plan (LCRBMP), Reclamation will identify sites, and design and build a series of impoundments for native fish habitats totaling approximately 600 acres in the old floodplain of the river (a lesser area may be accepted by the FWS if Reclamation establishes that a 600 acre total area is not feasible, but in no case shall less than 300 acres be accepted). To facilitate management of the impoundments, it is anticipated that most of them would be between three and 20 acres in size. Some larger impoundments would also be created to provide a variety of habitat conditions for the native fish. These impoundments are to be prototypes for expansion to other sites (but are not the endpoints for recovery needs); their configurations, depths, locations, etc.,**

are to be designed primarily to meet the habitat needs of native fish species and secondarily to allow for efficient construction and later management needs. These habitats can be on refuge lands, or any other lands Reclamation can fish, provided these lands are not compromised by toxic loads of salts, pesticides or herbicides resulting from agricultural activity.

These correspond to projects that stabilize population size and structure and re-establish native fish stocks, as proposed in the draft LCRBMP. These projects may use existing flatwater areas provided that: a) the backwater's size is within the parameters described in the preceding paragraph; and b) the existing backwater can be effectively isolated from recreationists, thus minimizing the opportunity for non-native fish to be introduced.

The language in the above provision is proposed in lieu of the original language. This proposed change is a result of new information received during the review process on the Biological Opinion. Reclamation and FWS have agreed to this proposed change. The proposed change is to reduce the minimum size of the impoundments to 3 to 20 acres with some larger acreage. The original minimum size of the impoundments was 100 acres. The information received showed smaller impoundments would be easier to manage.

1. *Time Frame: Completion of the protected habitats by the end of the consultation period.*
2. *Deliverables: Annual report on progress*
3. *Purpose of the requirement: To provide several pools of protected habitats for endangered lower Colorado River fishes.*

<u>Accomplishments since May 1999:</u>

Beal Lake on Havasu National Wildlife Refuge was identified in 1998 for a protected habitat for native fish. The work was initiated in 1999 and continues at this time. This project is a joint project among Reclamation, Fish and Wildlife Service and Ducks Unlimited. The project includes dredging a series of channels and pools in the lake to provide permanent deep water; construction of inlet and outlet structures to exclude non-native fish; the dredged material will be used to construct moist soil units proximate to the lake. This will result in 210 acres of protected habitat.

Rehabilitation of a wetland/pond complex on Imperial National Wildlife Refuge was also identified in 1998 as a possible development site for native fish. Construction work was initiated in 1999 and is mostly complete,

resulting in 35+ acres of protected habitats for native fish. Fish management work is needed over the next year to remove non-naive fish before stocking native fishes.

Three-fingers Lake on Cibola National Wildlife Refuge has been isolated from the old river channel. A portion of this lake will be reclaimed and used for native fish refuge.

An interagency fishery management team was established to oversee fish management of the native fish refuge.

Expenditures to date: $1,430,000

Identified Items Which May Impede Progress: Underfunding

Items to be Accomplished During the Next Year:

Completion of dredging and dike work at Beal Lake.

Completion of fishery management plan of Beal Lake and Imperial Refuge ponds.

Continued fishery development of 35 acres of protected habitat on Imperial Wildlife Refuge (remove nonnative fish).

Completion of 20 acres of protected habitat on Cibola Wildlife Refuge.

4. **Research funding. Reclamation will provide funds for research into habitat use and habitat preferences of native and non-native fish in the river with the goal of managing to reduce conflicts detrimental to native fish caused by the presence of non-native fish. The amount of funding will be negotiated between the FWS and Reclamation and shall begin within one year of the date of the final BO.**

This includes habitat preferences, habitat management opportunities, and exploration of options for competitor/predator management in the river. Portions of this will require input and approval by the State game and fish agencies and other appropriate entities.

Time Frame: Begin research within one year of date of the final BO.

Accomplishments since May, 1999

A symposium on the interactions among native and non-native fish was held July 13 and 14, 1999.

An existing contract between Arizona Game and Fish Department was modified to include determining the habits and habitat preference of large flathead catfish in the lower Colorado River. This information is needed as large flathead catfish are a potential predator for adult razorback sucker. The habitat requirements for the adults of both species may be similar.

Items to be accomplished during the next year:

Continuation of the flathead catfish study.

SOUTHWESTERN WILLOW FLYCATCHER

5. Immediate habitat protection/restoration. Reclamation shall immediately initiate a program to protect approximately 1,400 ac (565 ha) of currently unprotected riparian habitat that is currently used by southwestern willow flycatchers, preferably in the LCR area, but if insufficient land is available, then elsewhere within the southwestern willow flycatcher's range. If insufficient seasonally occupied habitat can be identified to be in need of protection, then unoccupied, but high potential habitat may be protected instead. All the required protections for at least 500 ac (202 ha) must be in place by January 1, 1999, and any necessary ecological restoration of the newly protected sites, including, but not limited to, cottonwood/willow reforestation, must be initiated by that date; all the required protections for the remaining areas necessary to comprise 1,400 ac total must be in place by January 1, 2001, and any necessary ecological restoration of the additional newly protected sites must be initiated by that date.

Protection can occur through acquisition, easements, partnerships, ecological restoration, etc, that result in long-term preservation of the habitat from destruction and from alteration in ways that would decrease its value as flycatcher habitat. The order of priority shall be: 1) occupied habitat on the LCR; 2) occupied habitat elsewhere in the flycatcher's range; 3) unoccupied, potential habitat on the LCR; and 4) unoccupied, potential habitat elsewhere in the flycatcher's range. Reclamation shall immediately initiate a range wide evaluation to identify suitable lands requiring protection for the recovery of the southwestern willow flycatcher (to be done in conjunction with the plan called for in the long-term flycatcher alternative compensation habitat provision, number 11, below). (Part of the lands protected may, if suitable, overlap with lands protected in the bonytail chub and razorback sucker impoundment projects under short term provision number 3, above.)

Accomplishments since May 1999:

Contracts/Agreements:

An agreement was signed on September 24, 1999, with the National Fish and Wildlife Foundation (NFWF) to acquire an additional 700 acres of property. An agreement was signed on September 23, 1999, with The Conservation Fund (TCF) to facilitate the acquisition of the additional 700 acres of property.

Coordination activities:

The Nature Conservancy submitted the final report on the rangewide assessment of habitat acquisition priorities for the southwestern willow flycatcher on July 1, 1999. Site visits have been conducted on all properties outlined in the July, 1999 Nature Conservancy report. Additional lands have been identified along the Virgin, Verde, San Luis Rey, San Pedro and upper Gila Rivers. Negotiations between Reclamation and landowners are currently underway.

Identified items which may impede progress: Budget shortfalls

Items to be accomplished during the next year:

Reclamation will continue to work with NFWF and TCF to acquire additional habitat.

Expenditures/Obligations

NFWF Agreement (FY99):	*$99,000*
TCF Agreement (FY99):	*$80,000*

6. **Review and evaluation. In cooperation with the FWS, Reclamation shall review and evaluate all fish and wildlife mitigation or enhancement programs involving riparian restoration in the action area to determine how the programs may be modified to maximize the conservation of the southwestern willow flycatcher.**

   The review and evaluation shall be completed for use in the next breeding season following the date of completion of this BO.

   This was accomplished in conjunction with Requirement number 2, above.

7. **Protective management. Reclamation shall implement protective management for existing flycatcher breeding groups and suitable habitat on the LCR.**

   Reclamation shall by March 15 of each year complete the following: 1) for each site occupied during previous years, evaluate and document existing and potential threats (inundation, desiccation, livestock, fire, recreation, habitat quality, parasitism, predation, etc.); 2) assess the potential to resolve the threats at each site; 3) with emphasis on larger breeding groups and larger habitat patches, develop management strategies including agreements, cowbird management programs, fire prevention, public education, fencing, etc.; and 4) implement the management strategies (see related Southwestern Willow Flycatcher Reasonable and Prudent Measure Number 1, below, on Habitat Protection).

   This provision is very similar to Reasonable and Prudent Measure (RPM) 1 (WIFL Habitat Protection). The following information, therefore applies to both RPA Provision 7 and RPM 1 (WIFL).

1. *Time Frame: Over the next 5 years.*

2. *Deliverables: Report due March 15th of each year beginning in 1998.*

3. *Definition: The purpose of the requirement is to document and minimize any threat or disturbance at occupied willow flycatcher sites. Occupied sites are sites where birds or pairs are documented during two or more visits throughout the willow flycatcher breeding season (May-August), with at least one of the detections occurring after June 15th. This definition was agreed upon by Reclamation and USFWS.*

Accomplishments since May 1999:

- *Fifth year of Cooperative Agreement with San Bernardino County Museum to survey, monitor and document threats at 128 sites along the Colorado, Virgin, Muddy and Gila Rivers. Pursuant to the requirement of this provision a site disturbance form was developed and filled out at each survey site in 1997. Disturbance forms for new sites were completed in 1998 and 1999 and this process will continue in 2000. The final agreement was mailed to the museum for signature in May 2000.*
  Interagency Agreement with the BLM Las Vegas Field Office to increase fire protection on Reclamation lands along the Las Vegas Wash (suitable WIFL habitat), on the Lake Mead National Recreation Area, and Virgin and Muddy Rivers (occupied sites). Pursuant to this agreement Reclamation provided Resource Advisors, a cellular phone and a 4X4 vehicle for fire support in 1998, 1999, and 2000.

  Interagency Agreement with BLM to fund a Fire Ecologist position in the Yuma Field Office.

  Cooperative agreement with the Hualapai Nation to document recreational use of Spencer Canyon, an occupied WIFL site, from May 1999-August 1999. This site has higher use during lower Lake Mead levels when more beach is exposed. Recreation use at this site was high in 1997 and 1998 (as indicated in Disturbance forms). This agreement also includes distribution of flyers to campers, boaters, etc., describing the unique value of Spencer Canyon as it relates to willow flycatchers.

Reports:

Report titled: Willow Flycatcher Disturbances, Threats and Protective Management Along the Lower Virgin and Colorado Rivers-1999" submitted to USFWS on March 15, 2000.

Coordination activities:

To document and alleviate threats at occupied WIFL sites we have coordinated with BLM offices in Yuma, Lake Havasu City and Las Vegas, the San Bernardino County Museum field crews, the NPS, lower Colorado River Refuge personnel, and the USFWS Ecological Services office in Phoenix, Arizona.

Funds expended/obligated:

Agreement for Flycatcher Survey/ Monitoring (FY99): $473,388
Agreement for Flycatcher Survey/Monitor (FY00): $660,803
Cooperative Agreement with Hualapai Nation to document recreation use of Spencer Canyon: $31,520
Fire Ecologist: $80,000

Identified items that may impede progress: budget shortcomings

Items to be Accomplished in the Next Year:

All Willow Flycatcher sites surveyed will be closely monitored to ensure that no changes in disturbances or threats are noted. It is expected that in the coming year, more site specific agreements to alleviate threats (i.e.: protective fencing) will be pursued. The 2000 disturbance report will be submitted to FWS by March 15, 2001. We will continue to fund a fuels/fire specialist position, either through an Interagency Agreement with BLM or by directly filling this position. This position would allow for increased fire protection for the lower Colorado River and provide for the possibility of prescribed burns along the LCR in our unique burn conditions to further protect riparian habitat.

- *Service Agreement with the Bureau of Reclamation's Technical Service Center in Denver, Colorado, to trap brown-headed cowbirds at occupied sites, including Bill Williams National Wildlife refuge and Alamo Lake,*

Arizona was signed in February 1999 and 2000; trapping was implemented in April 1999 and 2000 .

Reports:

Final Report titled Brown-headed Cowbird Control Program, Bill Williams River National Wildlife Refuge and Alamo Lake State Wildlife Area, Arizona: Results of the 1999 Program was submitted to USFWS March 15, 2000.

Coordination activities:

For the cowbird trapping program we have coordinated with Bill Williams River NWR and Arizona Game and Fish Department. In addition, all required permits are in place.

A total of 1,136 cowbirds were trapped at Alamo Lake and 307 from Bill Williams River NWR between May and July 1999. Four traps were deployed in each study area resulting in a total of 656 trap days. Both trapping programs were implemented in high value riparian areas with breeding southwestern willow flycatchers and many other species present. In addition, BOR personnel located a number of willow flycatcher nests at Alamo Lake. The 2000 field work is currently in progress at both sites.

Funds expended/obligated:

Service Agreement for cowbird trapping, 1999	*$69,600*
Service Agreement for cowbird trapping, 2000	*$69,600*

Items to be Accomplished in the Next Year:

Trapping will continue at these sites in the same manner as in previous years.

- *Cooperative Agreement with Colorado River Indian Tribes (CRIT) to conduct a breeding bird reproductive study on CRIT lands near Parker, Arizona. This project contributes to a nationwide effort, the Breeding Biology Research and Monitoring Database Program (BBIRD). This study will determine baseline nest success and habitat use of birds which use the same habitat and are subject to the same threats to survival and reproduction (disturbance, predation, parasitism, fire, habitat loss, etc.) as southwestern willow flycatchers.*

  Reports:

  Correlating Habitat with Breeding Success Through Participation in the Breeding Biology Research and Monitoring Database Program

(BBIRD), 1999 (in draft). -Field work for the 2000 season is currently underway at CRIT.

Funds Expended/obligated:

Cooperative Agreement 1999 $43,550.00
Cooperative Agreement 2000 $38,570.00

Items to be Accomplished in the Next Year: This study will continue for five years, as funds are available

- *Monitoring Productivity and Survival (MAPS) Station at CRIT: Bureau of Reclamation employees, with assistance and cooperation from CRIT, are conducting bird banding within riparian habitat on the CRIT lands adjacent to the location of the BBIRD study. These two studies work in conjunction to obtain baseline data on the life history of many breeding riparian birds on the LCR which use the same habitat and are subject to the same threats as southwestern willow flycatchers.*

Items to be Accomplished in the Next Year: This study will continue for five years, as funds are available

Funds Expended/obligated: $56,000.00

- *Surveying for Willow Flycatchers at Lake Mohave and Muddy Rivers. Bureau of Reclamation employees survey areas at Lake Mohave (1999) and Muddy Rivers and Lake Mohave (2000) approximately once per week for 10 visits or until birds are detected. At the time of this writing, breeding birds have been detected at both locations after the June 15 date.*

Reports:

Survey forms are sent to Arizona Game and Fish Department following each field season.

Funds expended/obligated: $50,000.00

Items to be Accomplished in the Next: Surveys will continue as funds are available.

8. **Study Funding. Reclamation shall fund a five-year survey, monitoring, and research program for the southwestern willow flycatcher along the LCR and confluent drainages in adjacent states.**

This program will include surveys and monitoring, dispersal/ recolonization studies, monitoring productivity and survivorship, monitoring predation and parasitism, determining flycatcher habitat relationships, determining ecological conditions that promote habitat on the LCR, GIS-integrated studies, and any additional appropriate elements Reclamation determines to be important for conservation efforts for the flycatcher. (Reclamation will discuss other research details with the FWS.)

This provision is very similar to RPM 2.1 (WIFL Survey and Monitoring). The following information, therefore applies to both RPA Provision 8 and RPM 2.1 (WIFL)

This provision directs Reclamation to include surveys and monitoring, dispersal/recolonization studies, monitoring productivity and survivorship, monitoring predation and parasitism, determining flycatcher habitat relationships, determining ecological conditions that promote habitat on the LCR, GIS integrated studies, any other Reclamation determined efforts important for WIFL conservation.

1. Time frame: Over the next 5 years

2. Deliverables: Annual report due to the Service December 1 of each year, beginning in 1997.

<u>Accomplishments since May 1999:</u>

Contracts:

Fifth year of Cooperative Agreement with San Bernardino County Museum to survey, monitor and document threats at 136 sites in 1999 along the Colorado, Virgin, Muddy and Gila rivers. Pursuant to this contract 37 sites were surveyed in 1996, 78 in 1997, 110 in 1998, and 136 in 1999. In addition this contract includes 54 point counts and ten 20m vegetation transects at each point below Separation Canyon, Grand Canyon. The final agreement was mailed to the museum for signature in May 2000. Southern Nevada Water Authority contributed funds towards this contract for work on the Virgin River and in the Grand Canyon in both 1998 and 1999. Results for 1996 through 2000 are as follows:

Relative abundance, total nest and survey sites for focused Southwestern Willow Flycatcher surveys along the lower Colorado River and its Tributaries between 1996 and 2000

Year of study	Number of Sites	Southwestern Willow Flycatcher #'s (Pairs)	Total Nests
1996	37	50	8
1997	78	76	31
1998	110	116	61
1999	136	111	51
2000	136	134-138	81

Fourth year of Cooperative Agreement with the Hualapai tribe to survey 12 sites and 5 continuous miles for flycatchers in the lower Grand Canyon. Pursuant to this agreement in 1997, six sites and 9.5 continuous miles were surveyed. In 1999, 12 sites and 12 continuous miles were surveyed. This agreement was signed in April of 1999.

Second year of Interagency Agreement with the Hopi Tribe to survey suitable flycatcher habitat near Tuba City, Arizona.

Development of a Population Viability Analysis model for the Willow Flycatcher has been funded (PXAO and Region) and is in progress.

In cooperation with the San Diego Natural History Museum and the Kern River Research Center: Funding to survey the wintering grounds of the Willow Flycatcher in Costa Rica, Panama, and to capture and band wintering flycatchers. Thirty-eight birds were banded on the wintering grounds, and one bird banded at Ash Meadows in Nevada during breeding season 1998 was captured in Costa Rica.

Reports

Report titled: "Status, Distribution, and Habitat Affinities of the Southwestern Willow Flycatcher along the Lower Colorado River Year 4-1999" (pending)

Report titled: "Southwestern Willow Flycatcher Surveys on the Hualapai Reservation-1999" submitted to Reclamation in September, 1999.

Report titled: "Hopi Southwestern Willow Flycatcher Surveys on Hopi Lands, Navajo and Coconino Counties, Arizona" submitted to Reclamation on November, 1999.

Report titled: "Recreation Monitoring Survey of Spencer Beach in Grand Canyon" submitted in May, 1999.

Coordination Activities

Reclamation met with personnel from USFWS, BLM, NDOW, SNWA, NPS, AGFD, USGS and SBCM to coordinate our 1999 and 2000 efforts.

Coordination is ongoing and constant with all the above agencies to coordinate the 2000 field season.

Funds Expended/Obligated:

Agreement for Flycatcher Survey/Monitoring (FY99):	*$473,388*
Agreement for Flycatcher Survey/Monitoring (FY00):	*$660,803*
Cooperative Agreement for Hualapai Surveys:	*$60,000*
Cooperative Agreement for Hopi Surveys:	*$50,000*
Viability Analysis Model:	*$139,153*

Identified items that may impede progress: budget shortcomings

Items to be Accomplished in the Next Year:

The flycatcher monitoring and survey report will be presented to USFWS by December 1, 2000. The Hualapai report will be submitted to Reclamation by September 30, 2000. Continuation of on-going studies.

BONYTAIL CHUB AND RAZORBACK SUCKER

9. **Reintroduction. Reclamation will support reintroduction of protected populations of bonytail chub to the lower river and Lake Mead.**

Reintroduction of additional populations of bonytail chub is in the LCRBMP. All populations of bonytail chub reintroduced under this item will be protected populations. In order for these populations to contribute to the recovery goals for the species, they must be protected under sections 7 and 9 of the ESA.

Reclamation will support the reintroduction of bonytail chub in writing and by other means when the reintroduction is proposed. Reclamation will initiate contacts, etc., to encourage reintroduction of bonytail chub in the lower river and Lake Mead.

10. **Recruitment. Populations of razorback suckers in lacustrine habitats persist for years and then disappear. The population in Lake Mead has persisted the longest of any known reservoir habitat. The status of this population is unclear, and as Lake Mead has the potential to support a large number of razorback suckers information on the existing population must be obtained. Reclamation will consolidate all existing information on the presence of razorback sucker in Lake Mead, with the intent of developing a history and baseline condition for this population. This effort will include all records of razorback sucker being observed and or captured within the reservoir and prior to reservoir formation, and will include a survey of the reservoir to determine areas presently being used by the species (it is assumed that this survey would be done during the spawning period). If preserved specimens are available, aging of razorback suckers from Lake Mead should be attempted, understanding that the results may not be conclusive. In addition, information on management of Lake Mead, from the filling of the reservoir in the 1930's, water levels since closure of the dam, and other information that may relate to how razorback suckers may have persisted in the reservoir. Reclamation will also evaluate similar information from central Arizona reservoirs such as Roosevelt, Saguaro, and Canyon Lakes.**

Management of large reservoirs may provide some opportunities to allow conditions favorable to native fish recruitment. Without an examination of the existing populations and past management of reservoirs that had or have razorback sucker populations, these opportunities may not be identified.

The above language is a proposed modification from the original provision. The original provision would have required sacrificing juvenile razorback sucker from Lake Mead in order to extract otolith bones for aging. That, coupled with the fact that aging razorback suckers is not an exact science, led to the proposed revision.

Time Frame - Over the 5 year period of the consultation.

Accomplishments to Date:

Reclamation has an agreement with Southern Nevada Water Authority to expand the ongoing razorback sucker study in Lake Mead to accommodate the survey effort provision of the RPA.

Funds Expended/Obligated: $250,000

Identified Items That May Impede Progress: none

Items to be Accomplished in the Next Year:

Continuation of the field portion of the requirement.

Scoping and granting contract for the evaluation of the operations of Lake Mead and other lakes which have had razorback sucker populations.

SOUTHWESTERN WILLOW FLYCATCHER

11. Alternative compensation habitat. Reclamation shall take part in a long-term program of on- and off-site compensation for historical southwestern willow flycatcher habitat that is lost and is not restorable on the LCR because of the effects of Reclamation's continuing operations and maintenance activities. This shall be coordinated with the range wide evaluation called for in the flycatcher short-term provision number 5, above, and with the Southwestern Willow Flycatcher Recovery Plan (in progress) and other efforts of the Southwestern Willow Flycatcher Recovery Team. The on-site compensation is additive to the requirements of provision number 5, above, and may be done in conjunction with provision number 14, below, on ecological restoration. The off-site compensation habitat, if not already used by southwestern willow flycatchers, will be managed to eliminate or sufficiently reduce the factors limiting to the species. By January 1, 1999, Reclamation shall present a plan to the MSCP for funding and implementation of the long-term program, e.g., through acquisition, easements, partnerships, ecological

restoration, etc., with the goal of initiating implementation by May 15, 2001. Alternative off-site compensation approaches that may be developed through the MSCP, that are aimed at achieving the same goals, could satisfy this provision.

This compensation represents the amount of historical southwestern willow flycatcher habitat lost or precluded from developing into suitable flycatcher habitat due to inundation, lack of flooding, widely fluctuating water levels, exotic species encroachment, water quality, soil salinity, or permanent structures because of the continuing effects of Reclamation's facilities and operations. Criteria for suitable potential flycatcher habitat are found in the Status of the Species--Habitat Use section of this BO. Reclamation, in conjunction with flycatcher short-term provision number 5, above, on immediate habitat protection, shall immediately initiate a range wide evaluation to identify suitable lands requiring protection for the recovery of the flycatcher; this shall be coordinated with other flycatcher recovery efforts undertaken in the future by the FWS, as well as with any flycatcher conservation efforts undertaken through the MSCP. As in provision number 5, protection can occur through acquisition, easements, partnerships, ecological restoration, etc., that result in long-term preservation of the habitat from destruction and from alteration in ways that would decrease its value as flycatcher habitat.

1. *Time Frame: Report due 1/1/99*
   Initial implementation by 5/15/01

2. *Deliverables: Report to MSCP by 1/1/99*

Accomplishments to Date:

The report and plan were completed.

Funds Expended/Obligated to Date: $140,000

Identified Items Which May Impede Progress: None

Items to be Accomplished During Next Year: Requirement has been completed.

BONYTAIL CHUB, RAZORBACK SUCKER, AND SOUTHWESTERN WILLOW FLYCATCHER

12. MSCP participation. Reclamation will continue to be an active participant in the MSCP process and will encourage involvement from all Federal and non-Federal parties involved in the operation of the LCR to achieve the stated conservation goal of the MSCP.

This is intended to encourage the continuation of the MSCP process and the inclusion of as many parties as possible so the solutions can be as complete as possible.

Accomplishments to Date:

Reclamation is an active participant in the MSCP process and will continue to do so. Annual expenditures Reclamation is contributing are as follows:

Plan Development Contract	*$500,000*
Facilitation Contract	*100,000*
Interim Conservation Measures	*100,000*
Support Staff	*200,000*

13. Discretion. Reclamation will provide the FWS:

a) A detailed account of the type and extent of the discretionary action flexibility available to it for all elements of the proposed action, under existing legal and contractual obligations, further clarifying any limits on such flexibility that were outlined in Table 1 in the Proposed Action section, above. This shall include, but not be limited to, all aspects of managing the water levels of all portions of the LCR. This account will be provided as soon as possible but no later than 120 days after the date of completion of the final BO.

b) Reclamation will identify any opportunities to increase that discretionary action flexibility in cooperation with the other parties. The specific parties will be named in each case. This account will be provided within 18 months after the date of completion of the final BO.

This component is intended to determine the legal, regulatory, and contractual limits on Reclamation's ability to manage the river. It will also assist in identifying other parties with action flexibility, determining the need for section 7 or section 10 discussions with those parties, and determining their involvement in the MSCP Steering Committee. Reclamation will then present a public forum for discussion of the limits on its discretion and how additional water may be found for fish and wildlife; this may be done in conjunction with the annual public meetings called for in provision number 16, below, on progress evaluation.

Accomplishments to Date:

Part (a) of the requirement was completed and sent to the FWS on September 30, 1997. Part (b) of the requirement was completed and sent to the FWS on October 30, 1998.

Identified Items Which May Impede Progress: None

14. Ecological restoration. Reclamation shall collect, review, and synthesize available information on channelization modification or removal projects undertaken or planned for other comparable river systems. This information will be used to evaluate the potential modification or removal of channelization works from certain areas of the LCR, that is, on modifying channel configuration and stabilization, relocating levees to restore the old floodplain (acquiring land if necessary), and letting the river meander within the floodplain, with the goal of restoring large expanses of diverse habitat for self-sustaining populations of the bonytail chub, razorback sucker, and southwestern willow flycatcher. This study shall include information on the hydrological and ecological conditions necessary to maintain significant, continuous stands of native riparian habitat, e.g., stands > 500 ha (1,235 ac), with adequate surface water and other necessary conditions. This information shall be synthesized in a report by January 1, 1999.

The study may include examining LCR areas currently without channelization and areas with channelization, and comparing the two. This study will assess the potential to restore natural-functioning cottonwood-willow areas and native fish habitat, to let the river meander within the floodplain, and to create "floods" to foster natural processes; it will also include analysis of the necessary management to sustain restored habitats and any related legal constraints that need addressing. This study shall be followed by an adequate number of demonstration or pilot projects to evaluate effectiveness of the techniques, to be completed by May 15, 2001.

Also, Reclamation shall take advantage on an opportunistic basis of any natural flood events that may provide the conditions necessary to accomplish ecological restoration, and shall incorporate the findings from analysis of any such events into the evaluation called for under this provision.

Reclamation shall then determine which techniques are the most effective for restoration of native cottonwood-willow riparian habitat and more natural floodplains and aquatic habitats for razorback sucker and bonytail chub habitat on certain portions of the LCR; this shall include analysis of the expected response of the river to use of the techniques, as far as impacts on existing habitats. Reclamation shall then present to the MSCP, no later than September 15, 2001, the results of the efforts called for under this provision and a plan for funding and implementation of a long-term, large-scale, ecological restoration program for the LCR. Alternative ecological restoration approaches that may be developed through the MSCP, that are aimed at achieving the same goals, could satisfy this provision.

In order to restore habitats to reflect historical rather than present conditions, information on restoration techniques available is an important component. Management to reduce conflicts detrimental to native fish caused by the presence of non-native fish, and to support southwestern willow flycatchers, will also require information on habitat restoration. Reclamation may use un-modified areas of the river as part of a pilot project, provided such areas are scientifically suitable for a comparative evaluation and are not restricted to one end of the river. The requirement to take advantage of natural flood events for ecological restoration purposes represents a form of adaptive management. Information regarding compliance with this provision shall be made available to the FWS's Upper Colorado River Basin Floodplain Restoration Program Coordinator and to the parties to the MSCP, and demonstration and pilot projects carried out shall be coordinated to the extent feasible with those programs.

Accomplishments since May, 1999:

Pratt Agricultural lease:
Approximately 6 acres of a BLM agricultural lease belonging to Loren Pratt, a longtime local farmer, were planted in Spring 1999, with 700 cottonwood and 700 willow trees from rooted stock. A portion of the acreage was also planted with cottonwood and willow seeds collected from trees along the Gila River. In addition, cottonwood and willow poles were planted to test a technique which involves laying the pole at an angle to create flycatcher habitat more quickly than by using vertical pole plantings. The plants and poles were planted using farm

equipment (tractor blade) to dig furrows and cover the plants. This method significantly shortened the time and labor involved and will be useful in planting large areas in the future. The lessee is being paid for his time, knowledge, and skills to irrigate and maintain the area, and as a consultant on the project. This is a precedent setting arrangement for the LCR, in that the lessee (or landowner) is given a monetary incentive to restore farmland to riparian habitat on the LCR. In cooperation with BLM, AZ G&F, USFWS-LCR Refuges, and the lessee, Mr. Loren Pratt, a team has been established to guide the restoration of the remaining acreage for restoration of wildlife habitat, including habitat for Willow Flycatchers.

Results after 1 Year:
Monitoring continues at the site and Mr. Pratt continues to assist in the irrigation of the site according to the following schedule. Each watering provides approximately 6 acre feet of water to the site.

Dates	*Nov 1- Feb 15*	*Feb 15- April 15*	*April 15- May 31*	*June, July, August*	*Sept., Oct.*
Number of waterings	*1/mo*	*1 every 2 wks*	*1/wk*	*2/wk*	*2/mo*

As of December 1999, survival of both species of trees planted from rooted stock (potted plants) is exceptionally high at 89% for cottonwoods (n=196), 100% for willows (n=200), 90% for cottonwood poles (n=43), and 80% for willow poles (n=50) (poles were planted at an angle). All trees from rooted stock and poles were over 15 feet tall at the beginning of the second growing season and are beginning to develop a closed canopy, as they were planted close together (6-8 feet). Virtually no salt cedar has invaded the areas of rooted stock plantings, and various grasses and other native and non-native species have developed dense mid- and under-story layers. Areas hand (and naturally) seeded with cottonwood and willow had more salt cedar invasion. These areas are still considered by BOR as a success, however, as they are developing into dense stands of mixed salt cedar, cottonwood, and willow with various grasses and ground cover species as understory.

This demonstration has provided many opportunities for improvements to our revegetation efforts. Mechanized planting will be used in the future for all revegetation efforts, and methods will continue to improve with the help and advise of local farmers. To lessen the invasion of non-native wind- borne seeds from the surroundings, a windbreak of cottonwood and willow trees can be

planted around the perimeter and in rows throughout the revegetation sites the first year using rooted stock. Once established to a height of +10 feet (this occurs by the end of the first growing season) these taller trees may act as a physical barrier to salt cedar seeds, which are wind dispersed from the surroundings. At the Pratt site, this, along with the shading effect from the taller trees, may have contributed to less invasion of salt cedar into the areas planted with rooted stock. The seeded areas were not provided this protection to the same extent and they were much more exposed to the surroundings. In addition, these larger trees planted as rooted stock tend to shade out salt cedar and prevent it becoming established in their their immediate vicinity. Once this physical barrier is established, the interior can be seeded with native cottonwood and willow.

The success of the Pratt site is also due to the condition of the soils, as it has been farmed successfully for over 50 years by the Pratt family. Although moderately high in clay content, salts are continuously driven down by copious irrigation and the soil is high in nutrients.

The following is a table showing the number of live trees counted in all areas following the first growing season at the Pratt site in December, 1999.

Seeded with Willow on 4/27/99 #Present 12/99: 113 cottonwood seedlings; 151 willow seedlings	Potted Plants- planted 3/30/99 Row 1a-12W,130cw Row 2a- 152 w Row 3a- 144w Row 4a- 143cw Row 5a- 139cw	Seeded with mainly Cottonwood on 4/2799 Present on 12/99: 1623 cottonwood seedlings; 109 willow seedlings	Potted Plants: (some poles planted) 3/30/99 Row1b-151 cw Row2b-149cw Row 3b 147 w Row 4b-147 w Row 5b- 27w Row 6b-70w POLES: Row 5b- 47w, 46 cw	Seeded with mainly Willow on 4/27/99. #Present on 12/99: 246 w; 12 cw	Survival 12/99: Willow rooted stock- 89%, (n=200) Cottonwood rooted stock- 100%, (n=196) Cottonwood poles - 90%, (n=43) Willow Poles 80%, (n=50)

Table X Layout of the Pratt field showing seeded areas, number of trees/poles planted and survival.

Cibola National Wildlife Refuge Demonstration Project:

In the Spring of 1999 Reclamation staff from the Regional Office in Boulder City in cooperation with Cibola National Wildlife Refuge staff planted over 13,000 cottonwoods, willows, and mesquites in a former cornfield on the refuge, now

known as the Nature Trail site. A portion of the 40 acres of farm field was planted with willows on close spacing to attempt to create willow flycatcher habitat. Flood irrigation is being used to grow the trees and create moist soil conditions to attract willow flycatchers.

During 1999 Reclamation, the Refuge, and Ducks Unlimited drafted a master plan for the restoration of the island unit. Included in the master plan was the upgrade of the existing water delivery system, providing adequate drainage, and the identification of areas to be restored. Restoration included both riparian restoration and enhancements for waterfowl. On the ground accomplishments on the island included tree planting, lining of over 2,000 l.f. of canal, clearing of over 80 acres of former farmland, and seasonal flooding of the east meander.

Results after 1 Year: This site continues to improve as willow flycatcher habitat in spite of a high invasion of Colorado River hemp and Bermuda Johnson grass, which has formed an under and mid-story at the site. The vegetation is extremely dense structurally. At the time of this writing, the trees are over +15 feet in height and the area is being flood irrigated once every two weeks during the growing season. Of the 13,000 trees planted, a test of the variance in height and Diameter at Breast Height (DBH) was conducted to determine a representative sample size. One hundred trees of each species were sampled using the point- quarter method (one tree in each cardinal direction is sampled at pre-determined points on a transect). This sample size was almost twice what the analysis determined was necessary, as there was very little variance in height or DBH in the sub-sample measured. The condition, height, and DBH of each tree was measured. The survival rate was almost 100% for both species, height of the willows averaged 2.53 m and average DBH was 1.39cm. Cottonwoods averaged 2.60m tall and had an average DBH of 1.01 cm.

Imperial National Wildlife Refuge Demonstration Project:
In the spring of 2000, approximately 9000 each of Fremont cottonwood and Goodings willow (18,000 total) were planted at the Imperial National Wildlife Refuge Demonstration site. The trees were planted using a two seat tree planter which is pulled behind a tractor. Using this equipment we were able to plant approximately 650 trees per hour with one tractor driver,1 truck driver, 2 people planting trees from the tree planter, and 6 people assisting in loading and unloading plants. These trees are being be irrigated by filling each cell in the system to capacity throughout the growing season (filled from the bottom up). Monitoring of soil conditions will be conducted throughout the growing season as the water levels are brought up and down to flush salts from the sandy soils. Growth and survival of the trees will be monitored following the first growing season.

A groundwater well has been drilled and completed at the site. The existing pump which is used to irrigate fields which could be used to provide managed flooding of the native fish ponds has been retrofitted with a self cleaning fish screen and is currently undergoing evaluation.

A technical workgroup has been formed to address issues concerning the care and management of native fish into these newly created native fish protected habitats.

Havasu National Wildlife Refuge Demonstration Project:
Beal Lake, a 225 acres backwater located on Havasu Refuge, was identified as a potential native fish impoundment. Restoration of the lake was discussed as the Mohave Valley South restoration concept in the "RPA Provision No. 14: Synthesis of Ecological Restoration Concepts for the Lower Colorado River". During 1999, permitting, clearing and grubbing, and upgrading of an existing access road was completed. Dredging activities started in March of 2000 and are expected to be completed by March of 2001. Segregation of native fish populations within the lake from non-native species outside the lake is a critical concern of the project. To this end the University of Nevada at Las Vegas has been retained to provide technical assistance and materials testing of a proposed passive fish filtering system. Pending the results of the material testing, full scale implementation of the passive fish filtering system is scheduled for Spring of 2001. Upon completion of the project it is estimated that 225 acres of native fish protected habitat, 150 acres of irrigated moist soil units, and 80 acres of riparian habitat will be established.

Expenditures to Date: $1,000,000 includes the following:

Cibola NWR: Coop. Agreement with the Cecil and Loren Pratt (pending) $ 10,000.
Imperial NWR: $100,000 (trees)
$13,500 (personnel)

Items to be Accomplished in the next year: Continue monitoring, continue planning and negotiations with BLM and the Pratt family for future projects at the site.

Identified Items Which May Impede Progress:

Scheduling of in-house maintenance crews and contractual delays may impede progress.

Items to be Accomplished during Next Year:

Continued monitoring of the demonstration projects.

A report that summarizes the results of the demonstration projects currently underway is scheduled to be drafted by May 15, 2001.

A plan for funding and implementation of a long-term, large-scale, ecological restoration program for the LCR is scheduled to be drafted and submitted to the Multi-Species Conservation Program by September 15, 2001.

15. **Agreements. Reclamation shall use the full scope of its discretion to develop agreements with all MSCP parties and others, as necessary, including, but not limited to, acquiring property and other resources, to enable implementation of all of these RPA provisions.**

Again, participation by the MSCP parties is vital to achieving the requirements set forth in this BO.

As part of Reclamation's participation in the MSCP process and Reclamation's implementing the requirements of the Biological Opinion agreements are being developed. These include but are not limited to agreements with the Nature Conservancy, Fort Mohave Indian Tribe, Fish and Wildlife Service Refuges, Southern Nevada Water Authority, Metropolitan Water District, Bureau of Land Management, Arizona Game and Fish Department, California Department of Fish and Game, Nevada Department of Wildlife, and others.

16. **Progress evaluation. Reclamation shall meet on an annual basis during the consultation period with the FWS, other agencies, and the public to review and evaluate progress on the RPA.**

This review, to evaluate progress and effectiveness of the RPA, shall include a written progress report and public presentations on: data collected; preliminary results of studies, demonstration and pilot projects underway; and implementation of each of the RPA provisions, as well as implementation of the Reasonable and Prudent Measures and Terms and Conditions, below.
This report is a portion of fulfilling the Requirement. Public presentations at the MSCP Steering Committee meetings will be conducted.

17. **If implementation failure occurs: If Reclamation has not fully implemented the RPA requirements, or the MSCP process fails, then Reclamation must reinitiate formal Section 7 Consultation.**

Because all LCR interrelated and interdependent actions would have to be part of the re-initiated consultation, any changes in such actions would be part of the proposed action and not handled separately. The complete action, over a meaningful time frame, must be the subject of a future consultation, in the absence of the MSCP. Implementation of the MSCP is very important to the present consultation.

Reclamation will reinitiate formal Section 7 Consultation should the MSCP process fail.

REASONABLE AND PRUDENT MEASURES

BONYTAIL CHUB AND RAZORBACK SUCKER

1. Reclamation will assess and reduce the potential stranding of eggs, larvae or individual fish; if needed, Reclamation will seek agreements from necessary parties to implement this measure.

Implementation:

1. Reclamation will evaluate the amount of spawning and nursery habitat that would be exposed by water level fluctuations in riverine areas in the January through May period. The amount of such habitat available to fish depends upon the actual total amount of water released and the daily fluctuations in the release. The amount of potential spawning and nursery habitat (i.e., habitat that would be under water at the highest daily flow), will vary over the five month period and the FWS and Reclamation will have to evaluate this variance. Once the evaluation is completed, the possibilities to reduce such exposures will be examined. The evaluation, based over the first January through May period following issuance of the final BO, must include, at a minimum, a delineation of affected areas, an estimate of population size for the endangered fish species in affected areas, the extent of discretion in water releases available to each area, and the potential benefits to non-native fish species from either maintaining or altering the current system.
2. The evaluation in term number 1, above, will be completed by October 1 following the first January to May evaluation period after the date of the final BO and shall be provided to the FWS and the MSCP Steering Committee. Reclamation will have until next January to put in place alternatives that are reasonable, prudent, and environmentally feasible that will minimize effects to

bonytail chub and razorback suckers; if needed, Reclamation will seek agreements from necessary parties to implement this term.

Approach - In order to adequately assess the potential of impacts of stranding on native fishes Reclamation conducted literature surveys to determine to what degree stranding affects fishes in general, and specifically how stranding affects native Colorado River fishes such as bonytail chub and razorback suckers. Reclamation then reviewed literature where spawning razorback suckers had been observed and their activities documented. Finally, Reclamation went into the field and made direct observations on razorback sucker in riverine reaches of the lower Colorado River.

Accomplishments:

Completed a literature search on stranding of fish eggs and larvae.
Reviewed literature on razorback sucker behavior.
Physically mapped gravel bar spawning areas and measured depths of the water on spawning areas used by razorback sucker downstream of Hoover Dam.
Videoed and photographed the spawning areas mentioned above.
Initiated analysis of the information gathered on the spawning razorback suckers.
Completed analysis report. (See appendix)

Expenditures to Date: $10,000

Identified Items Which May Impede Progress: None

Items to be Accomplished During the Next Year: None

2. Reclamation will assess and reduce the potential of bonytail chub and razorback suckers passing through the hydroelectric dams.

Implementation:

1. Reclamation will determine, using surrogate measures or species, modeling, and other appropriate risk analysis, the current potential for bonytail chub and razorback sucker to pass through turbines at each of the LCR hydroelectric generating dams. Once the risk determination is complete, Reclamation will evaluate potential changes to existing management that would reduce passage of fish through each dam's turbines. The assessment will be completed within one year of the date of the final BO and the evaluation of management alternatives will be completed within another 120 days. These assessments and evaluations will be discussed with interested parties involved in the MSCP process, and both the assessments and evaluations will be provided to the MSCP Steering Committee and the FWS.

2. Reclamation will implement those alternatives, if any, that reduce the risk of fish passage and are economically, technologically, and environmentally feasible, within one year of the date of the completed risk determination.

3. Reclamation will provide reports documenting determinations and decisions made in terms number 1 and 2, above, to the FWS and the MSCP Steering Committee.

4. In the event that incidental take is exceeded, within seven (7) days Reclamation will provide the FWS with a report on where, why and how this excess occurred. At the time of the report, Reclamation and the FWS will convene a meeting to address a method(s) for avoiding further take expected to occur during the remaining period covered by this consultation. Such determination(s) shall be implemented as appropriate. Should an individual of either species be found showing signs of having passed through a dam, Reclamation will contact the FWS within 48 hours.

Accomplishments: see #3 below.

3. Reclamation will assess and reduce the potential of bonytail chub and razorback suckers being lost to the system because of entrainment.

Implementation:

1. Reclamation will evaluate all diversions (to canals or pipelines) for their potential to remove fish from the system. Diversions that allow for access into and out of the system will be evaluated for the potential of such movements of fish. This will be completed and a report provided to the FWS within one year of the date of the final BO.

2. Management programs for all accessible canals will be examined by Reclamation in consultation with the affected water rights or contract holders to determine if present management encourages or discourages fish residency in the canal system. Reclamation will work with canal owners to develop monitoring programs to locate listed fish. This task will be completed and a report provided to the FWS within 18 months of the date of the final BO.

3. Reclamation will work with appropriate Federal and non-Federal parties to research appropriate technologies to prevent fish entrainment into canals or pipelines from which return to the system is unlikely. If economically, technologically, and environmentally sound methods exist to reduce the potential for fish to access these canals or pipelines, Reclamation will work with the owners of the facilities to incorporate such methods into each facility within five years of the date of the final BO. A report detailing each decision herein will be provided to the FWS and the MSCP Steering Committee before the end of the five year consultation period.

Accomplishments:

Acquired and accumulated reports on tagging studies for razorback sucker and bonytail chub for lakes Mead and Mohave, and the Colorado River above Imperial Dam.

Conducted two tagging studies :

1) Tagged 20 sub-adult razorback suckers with radio tags and released into river between Parker Dam and Headgate Rock Dam during summer 1998. Most fish moved downstream. None of the fish were determined to have been diverted into the irrigation canal system supplying water to the Colorado River Indian Tribes.

Eight fish were believed to have passed through Headgate Rock Dam. Two of these fish were alive and well at the end of the study (90 day battery life on tags). Over half of the fish were not contacted after the second day and most of these were believed to have died due to high temperatures. This work is currently being repeated. Twenty additional fish were tagged and released in April 1999 and are being tracked.

2) Tagged and followed fish in Lake Havasu during the winter/spring. Twenty sub-adult razorback sucker were released in the vicinity of the intakes for the Central Arizona Project and the Metropolitan Water District. The majority of these fish moved into the Bill Williams River and remained there for the duration of the study (again, tag life is limited to roughly 90 days due to battery). None of the fish moved into or near either the Parker Dam Power Plant intake area or the Central Arizona Project's Lake Havasu Pumping Plant. One fish was located at the intake trashracks of the Metropolitan Water Districts pumping plant; however, it could not be determined whether the fish was or was not entrained.

A long-term tracking study was initiated for the area between Davis and Parker Dams. Twenty razorback suckers and twenty flannel mouth suckers have been tagged and released in the river between Davis and Parker Dams. These fish will be followed over the next two years. Data from this work will be used to update the risk analysis.

A preliminary risk analysis for passage through dams and entrainment was completed. The final risk analysis will be finalized upon completion of current tracking studies.

(Note: During spring 2000, it was determined that two juvenile suckers released in Lake Mohave at Katherine's Landing had successfully passed downstream through the Davis Dam Power Plant. The fish were captured on two separate surveys in the river. Both were healthy and doing well.)

<u>Expenditures/Obligations to Date:</u>

$155,000 to Geological Survey for tagging and tracking study.
$35,000 salaries and materials

<u>Identified Items Which May Impede Progress</u>: None

<u>Items to be Accomplished during the Next Year:</u>
Continuation of the tagging and tracking of razorback sucker.

SOUTHWESTERN WILLOW FLYCATCHER

1. Reclamation will protect southwestern willow flycatcher habitat on the LCR.

Implementation:

1. Reclamation will protect occupied flycatcher habitat regardless of plant species composition, and unoccupied, but potential flycatcher habitat, including stands of willow, cottonwood-willow, and mixtures of salt cedar and cottonwood-willow in all portions of the LCR under Reclamation management; provided that this term shall not be interpreted to require protection of salt cedar when its removal would actually result in improved flycatcher habitat, but salt cedar removal should not occur in an extant or recently-extant flycatcher location. Protection actions will include but not be limited to cowbird trapping in and near occupied habitat, fire breaks, and measures such as levee road closures to limit recreational disturbance of occupied sites.

2. In areas not under Reclamation management:

a. Reclamation will immediately develop agreements with appropriate land management agencies along the LCR to implement a cowbird trapping program in the specific area(s) where cowbird parasitism rates have been monitored for one year from the date of the final BO and parasitism rates have been monitored for one year from the date of the final BO and parasitism rates exceed 10% at any LCR site. Reclamation will continue trapping at the specific area(s) during the five year consultation period or until alternative means of reducing take have been negotiated with the FWS.

See discussion for Provision #8

b. Reclamation will develop agreements with appropriate land management agencies along the LCR to put in and maintain fire breaks to protect occupied or potential southwestern willow flycatcher habitat from wildfire within one year of the date of the final BO.

1. Time frame: Over the 5 year period of the Consultation.
2. Deliverables: Annual report due to USFWS each year by September 30, beginning in 1997

Accomplishments

Coordination

Reclamation met with Yuma BLM on several occasions to exchange Lower Colorado fire management information. We have coordinated extensively with the BLM and Arizona State Lands Department in order to receive information on fires burning in riparian zones on the LCR.

Completed Projects

Reclamation has produced GIS maps of the fires presented in the above mentioned report. Reclamation purchased a fireboat to be stationed at Havasu NWR to assist with fire-fighting efforts on the river.

Funds Expended/ Obligated: $70,000

Identified Items Which May Impede Progress:

The usefulness/practicality of fire breaks in dense willow flycatcher habitat has been questioned by BLM, and other agency personnel. In addition, access closures are difficult politically.

Items to be Accomplished During the Next Year:

Reclamation is pursuing agreements and easements to increase fire protection through closures and fire breaks. The effectiveness of such measures and a report of all fires in riparian areas along the LCR will be submitted to USFWS in September 2000.

c. Reclamation will develop agreements with appropriate land management agencies along the LCR to close levee roads and put in place and enforce other public closures necessary to minimize impacts to southwestern willow flycatcher habitat from fire and disturbance within one year of the date of the final BO.

To date no need for public closures in specific areas have been identified. Reclamation will continue to closely coordinate with the land management agencies and develop agreements for closures should they become necessary.

3. Reclamation will initiate a public information program within one year of the date of the final BO to alert resource users about the dangers of wildfire to riparian habitat.

1. Time frame: Wildfire public information distribution must be completed by May 1, 1998.

Accomplishments to date:

Completed projects:

Brochure on wildfire danger completed. 10,000 copies have been distributed.

Funds Expended/Obligated: $10,000

Identified items which may impede progress: none

Items to be accomplished during next year:
Continue public information efforts on dangers of fire to riparian habitat.

2. Reclamation will conduct additional surveying and monitoring of southwestern willow flycatcher habitat on the LCR.

Implementation:

1. Reclamation will conduct additional status surveys of all occupied and potential southwestern willow flycatcher habitat on the LCR over the next five years and a representative sample each year after that, or until alternative means of reducing take have been negotiated with the FWS to determine the number of flycatcher territories, the number of breeding pairs, the breeding status of pairs, cowbird parasitism rates, predation rates, nest success, biotic and abiotic habitat relationships of occupied sites, and the genetic relationships of flycatchers throughout the LCR for comparison with genetic data obtained from flycatchers

breeding at Roosevelt Lake and the San Pedro River, Arizona. Reclamation will deliver a report of the findings to the FWS annually, by December 1.

See Requirement #8.

2. Reclamation will determine the effectiveness of the fire break and recreational access measures by monitoring location, size, and timing of fires on the LCR. Such monitoring will include acquisition of both ground and aerial color transparencies of all occupied or potential southwestern willow flycatcher habitat areas that are burned, partially or completely by fire. A yearly report, due September 30 each year, will be provided to the FWS and will include photographs described above, a summary of the fire activity over that period, the amount of southwestern willow flycatcher habitat affected, effectiveness of closures and fire breaks, and recommendations for the coming year that can be transmitted to other agencies.

Accomplishments:

Report titled: "Fire Occurrence Along the Lower Colorado River in Potential or Occupied Southwestern Willow Flycatcher Habitat from October 1996 Through July 1997", submitted to USFWS on September 23, 1997.

Report titled: "Fire Occurrence Along the Lower Colorado River in Potential or Occupied Southwestern Willow Flycatcher Habitat from August 1997 through August 1998", submitted to the FWS September 30, 1998.

Report titled: "Fire Occurrence Along the Lower Colorado River in Potential or Occupied Southwestern Willow Flycatcher Habitat from August 1998 through August 1999", submitted to the FWS September 30, 1999.

Items to be Accomplished During the Next Year:

Continue the monitoring and reporting effort.

YUMA CLAPPER RAIL

1. **Operations and maintenance actions by Reclamation must result in no net loss of Yuma clapper rail habitat, otherwise rails will be taken due to loss of nesting habitat. Disturbance of rails and rail habitat must be minimized. If areas are affected, they must be restored or replaced.**

   Implementation:

   1. All clapper rail habitat areas destroyed or degraded due to future project activities shall be restored by the action agency.

   2. This restoration shall be implemented as part of the scheduled project activity and completed within one year of the action.

   3. Reclamation will develop/update and begin to implement rail management plans for areas under its management that currently or potentially support Yuma clapper rails within one year of the date of the final BO. These plans shall include management protocol for operations and maintenance activities that need to occur within or near rail habitat. These activities can be expanded in future years as part of the MSCP.

   4. Where there is discretion regarding the scheduling of activities (such as non-emergency work or activities that are not constrained seasonally) in or near rail habitat, the clapper rail nesting season (March 15-July10) will be avoided.

   Accomplishments:

   A Yuma clapper rail management plan was completed for areas under Reclamation's management authority.

   All disturbance activities have avoided rail habitat and are not conducted during the nesting season near rail habitat.

   Items to be Accomplished During the Next Year:

   Continue implementing the management plan, and ensuring rail habitat and disturbance are avoided.

2. **Subject to the limitations of the RPA for the bonytail chub, razorback sucker, and the southwestern willow flycatcher (which take precedence over this**

provision), dredging to maintain wetland and backwaters to offset succession and to benefit clapper rails must be continued as part of Reclamation's annual maintenance program on the Colorado River.

Implementation:

1. Subject to the limitations outlined in the RPA for the bonytail chub, razorback sucker, and the southwestern willow flycatcher, Reclamation will continue to maintain all mitigation backwaters and will work with all resource agencies on a cost share basis to maintain other backwaters. These backwaters will contain areas suitable for the Yuma clapper rail habitat.

Accomplishments to Date:

Reclamation has committed to continue maintenance of the mitigation backwaters.

FLAT-TAILED HORNED LIZARD

1. Worker education programs and procedures shall be implemented to avoid or minimize the take of flat-tailed horned lizards resulting from operation and maintenance of the project facilities.

Implementation:

1. All personnel who implement the proposed action shall be briefed on the biology and status of the flat-tailed horned lizard, protection measures designed to reduce potential impacts to this species, and reporting procedures to be used if flat-tailed horned lizards are encountered in the field. Personnel shall be advised that handling of flat-tailed horned lizards by anyone is prohibited by State law without a permit.

2. Reclamation shall implement standard mitigation measures for the flat-tailed horned lizard detailed in the Flat-tailed horned Lizard Rangewide management Strategy for work in flat-tailed horned lizard habitat.

3. No ground-disturbing maintenance activities shall occur within the context of this conference. Any ground-disturbing activities are outside the project description herein and will require additional site-specific section 7 compliance.

Reclamation presently has two guidance documents for management of the Flat-tailed Horned Lizard (FTHL). The primary guidance document for management of the FTHL is the Flat-tailed Horned Lizard Rangewide Management Strategy (Strategy) dated May 1997 and adopted June 9, 1997. The Strategy is primarily a conservation plan. In addition to the Strategy, the BO provides mandatory terms and conditions for the FTHL that are required to implement the reasonable and prudent measures identified in the BO. The BO was developed with the Strategy in mind so the guidance in the BO reflects the direction in the Strategy.

RPM 1 - Implement Worker Education Programs

1. Time frame

   FY 99, FTHL worker education programs given to staff on an as needed basis.

   Accomplishments to date:

   Two classes were presented to staff in July 1999.
   Two on site FTHL survey classes were given in August 1999.
   FTHL brochure were completed and distribution has occurred to employees and the public.

Reports

None

Coordination activities

Coordinated agency FTHL activities with the Management Oversight Group (MOG) and Interagency Coordinating Committee (ICC) responsible for overseeing implementation of the Strategy. Coordinated FTHL management issues for the Yuma Desert Management Area with the Arizona ICC members. Reviewed and coordinated agency actions and those proposed by clients for compliance with the Strategy and BO. Mitigation and/or compensation was required for the reviewed projects.

Completed projects:

Funds Expended/Obligated: April 1999 $60,000 for Interagency Agreement No.99-AA-34-00006 for Acquiring Scientific Information for the Conservation and Management of the FTHL. Report on findings to be completed.

$2,600 for FTHL brochure

Identified items which may impede progress:

None.

Items to be accomplished during the next year:

Reclamation will continue to schedule FTHL worker education programs in 2000. Reclamation is in the process of developing a Spanish FTHL brochure for distribution to employees and the public in mid to late 2000. Continued participation on MOG and ICC. Continued evaluation of Reclamation projects that may affect the FTHL and/or FTHL habitat.

2. Reclamation shall monitor incidental take resulting from the proposed action and report to the Service the findings of that monitoring.

Implementation:

1. At the end of each calendar year, Reclamation will submit a monitoring report to the Arizona Ecological Services Field Office. The report shall include numbers and locations of flat-tailed horned lizards encountered; and numbers of flat-tailed horned lizards killed, injured, moved, or otherwise taken as a result of activities authorized by this conference opinion. The report will also make recommendations for modifying or refining the terms and conditions stipulated herein to enhance flat-tailed horned lizard protection or to reduce needless hardship on Reclamation.

2. Reclamation will work with the Marine Corps Air Station - Yuma, the Bureau of Land Management, Arizona Game and Fish Department and other entities to support research necessary to: 1) improve our knowledge of the

ecology and life history of the flat-tailed horned lizard, particularly in regards to demographic parameters needed to better understand population dynamics and viability; and, 2) determine the relationship between scat/lizard counts and lizard densities.

Time frame

Submit a monitoring report to the Arizona Ecological Services Field Office at the end of each calendar year. FTHL research will be supported by Reclamation on an on-going basis.

Deliverables

The annual monitoring report shall include numbers and locations of flat-tailed horned lizards encountered; and numbers of flat-tailed horned lizards killed, injured, moved or otherwise taken as a result of Reclamation activities.

Accomplishments to Date:

Contracts

Reclamation provided $60,000.00 in funding under Interagency Agreement No. 99-AA-34-00006 to the Department of the Navy on May 7, 1999 to study FTHL's in the Yuma Desert Management Area. The study will determine FTHL population densities in the Management Area and also provide information regarding densities near roads. Population densities are required to manage and maintain lizard populations inhabiting the MA. Reclamation participated in designing study protocols and will monitor the progress of the study.

Reports

During this reporting period, Reclamation did encounter FTHL's No FTHL's were any killed, injured, moved, or otherwise taken as a result of activities authorized under the BO. Several progress reports were received from the Department of the Navy detailing the accomplishments to date of FTHL research conducted under our interagency agreement.

Coordination activities

Coordinated and approved FTHL research interagency agreement with the Department of the Navy. Coordinated FTHL research proposal with the Arizona ICC members and the research team leader from Utah State University.

Funds expended/obligated:

Expended $60,000.00 in FY 99 funds for the interagency agreement with the Department of the Navy.

Identified items which may impede progress:

None

Items to be Accomplished During the Next Year:

Continue to work closely with the Arizona ICC members regarding ongoing FTHL research. Reclamation also plans to fund and place FTHL signs along the perimeter of the FTHL Yuma Desert Management Area. Completion of a Spanish FTHL brocure.
Assisting the US Fish and Wildlife personnel in a trapping web project. Coordinate a contract for a FTHL research with CEDO for research in Mexico. Fund a wire mesh fence study with the USU scientists.

SUPPORT ACTIVITIES

GIS/PHOTO INTERPRETATION

Reclamation has completed mapping and producing a GIS of riparian habitat vegetation along the Colorado River and the Virgin River using analysis of 1998 color aerial photographs and ARC/INFO. Reclamation needs current information about the distribution of riparian habitat vegetation types and open water in these areas to support activities required by USFWS Biological Opinion (BO) on USBR Operation and Maintenance of the Lower Colorado River.

1999 RIPARIAN RESTORATION PROJECTS

Reclamation has also funded several studies throughout the southwest during 1999 to further enhance knowledge on riparian ecosystems. Reclamation is the primary funding source for the Nevada breeding bird atlas program. Reclamation is funding studies on riparian breeding bird communities in southern Nevada and yellow-billed cuckoo populations on the Bill Williams River.

NATIVE FISH WORK GROUP

This past year Reclamation has continued the lead with the Lake Mohave razorback sucker program through the Native Fish Work Group. During the spring/summer of 1998, some 15,000 yearling razorback sucker ranging in size from 3 to 6 inches (reared from 1997 wild caught larvae) were placed in protected coves around Lake Mohave, Boulder City Wetlands, and Boulder City Golf Course ponds for grow out. By December 1998, over 7,500 of these fish were harvested, PIT tagged and repatriated to Lake Mohave. The total number of fish reared from larvae and now returned to the lake under this program is over 23,000.

NFWG participants collected 80,000 wild razorback sucker larvae during the January-April 1999 period. These larvae were transported to Willow Beach National Fish Hatchery for further rearing. An additional 50,000 larvae were gleaned from hand-spawned fish captured from Lake Mohave in January and 50,000 more larvae were produced from adults taken from the river above Willow Beach Fish Hatchery in March. The wild larvae will be reared and returned to Lake Mohave. The production larvae will be reared and stocked into waters other than Lake Mohave.

During 1999 spring monitoring surveys of spawning razorback suckers in Lake Mohave roughly 20% of the adult fish were repatriates.